Heredity

An International Journal
of Genetics
founded by
C. D. Darlington and R. A. Fisher

Owned by the Genetical Society
of Great Britain

Edited by
T. J. Crawford, J. F. Y. Brookfield
and D. A. Laurie

Volume 81 1998

Blackwell
Science

© 1998 The Genetical Society of Great Britain
Published by Blackwell Science Ltd
Osney Mead, Oxford OX2 0EL
25 John Street, London WC1N 2BL
23 Ainslie Place, Edinburgh EH3 6AJ
Commerce Place, 350 Main Street, Malden, MA 02148-5018, USA
54 University Street, Carlton, Victoria 3053, Australia

Other Editorial Offices:
Blackwell Science KK, MG Kodenmacho Building, 7–10 Kodenmacho, Nihombashi,
Chou-ku, Tokyo 104, Japan

Blackwell Wissenschafts-Verlag GmbH, Kurfürstendam 57, D-10707 Berlin, Germany

Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by The Genetical Society of Great Britain. For libraries and other users registered with the Copyright Clearance Center (CCC) Transcational Reporting Service, authorization is granted provided that the base fee of $14.00 per copy is paid directly to CCC, 222 Rosewood Drive, Suite 910, Danvers, MA 01923, USA. This consent does not extend to other kinds of copying such as copying for general distribution, for advertising or promotional purposes, for creating new collective works or for resale. Special requests should be addressed to the Editor, Heredity, ISSN 0018-067X/97 $14.00.

Heredity is covered by *Biological Abstracts, Chemical Abstracts, Current Awareness in Biological Sciences, Current Contents Agriculture, Biology & Environmental Sciences, Current Contents Life Sciences, Genetics Abstracts, Index Medicus, Research Alert, Science Citation Index, Sci/Search* and *Social Sciences Citation Index*

ISSN 0018-067X

Typeset by Unicus Graphics Ltd, Horsham
Printed and bound by The Devonshire Press Ltd, Torquay

Volume contents

Number 1 July 1998

1 Short Review
D. Charlesworth and Phillip Awadalla
Flowering plant self-incompatibility: the molecular population genetics of *Brassica* S-loci
10 *Robert A. Conte, Rhea V. Samonte and Ram S. Verma*
Evolutionary divergence of the oncogenes GLI, HST and INT2
14 *Stanley Dean Rider, Jr, Gerald E. Wilde and Srinivas Kambhampati*
Genetics of esterase-mediated insecticide resistance in the aphid *Schizaphis graminum*
20 *Heleen J. M. Bastiaanssen, Petra M. M. M. van den Berg, Pim Lindhout, Evert Jacobsen and M. S. Ramanna*
Postmeiotic restitution in 2*n*-egg formation of diploid potato
28 *Derek A. Roff*
Effects of inbreeding on morphological and life history traits of the sand cricket, *Gryllus firmus*
38 *Norbert Pongratz, Timothy F. Sharbel, Leo. W. Beukeboom and Nico K. Michiels*
Allozyme variability in sexual and parthenogenetic freshwater planarians: evidence for polyphyletic origin of parthenogenetic lineages through hybridization with coexisting sexuals
48 *Sara A. Knott and Chris S. Haley*
Simple multiple-marker sib-pair analysis for mapping quantitative trait loci
55 *Joanne C. Daly and Jennifer H. Fisk*
Sex-linked inheritance of endosulphan resistance in *Helicoverpa armigera*
63 *Lars M. Berg, Martin Lascoux and Pekka Pamilo*
The infinite island model with sex-differentiated gene flow
69 *Jan E. Aagaard, Konstantin V. Krutovskii and Steven H. Strauss*
RAPDs and allozymes exhibit similar levels of diversity and differentiation among populations and races of Douglas-fir
79 *Patrik Waldmann and Stefan Andersson*
Comparison of quantitative genetic variation and allozyme diversity within and between populations of *Scabiosa canescens* and *S. columbaria*
87 *Francis M. Jiggins, Gregory D. D. Hurst and Michael E. N. Majerus*
Sex ratio distortion in *Acraea encedon* (Lepidoptera: Nymphalidae) is caused by a male-killing bacterium
92 *Richard F. Preziosi and Derek A. Roff*
Evidence of genetic isolation between sexually monomorphic and sexually dimorphic traits in the water strider *Aquarius remigis*
100 *François Balfourier, Gilles Charmet and Catherine Ravel*
Genetic differentiation within and between natural populations of perennial and annual ryegrass (*Lolium perenne* and *L. rigidum*)
111 *Thomas Reusch and Wolf U. Blanckenhorn*
Quantitative genetics of the dung fly *Sepsis cynipsea*: Cheverud's conjecture revisited
120 Book reviews
125 Referees

Number 2 August 1998

127 Short Review
W. C. Jordan and M. W. Bruford
New perspectives on mate choice and the MHC
134 *M. D. Loveless, J. L. Hamrick and R. B. Foster*
Population structure and mating system in *Tachigali versicolor*, a monocarpic neotropical tree
144 *Donald A. Stratton*
Reaction norm functions and QTL–environment interactions for flowering time in *Arabidopsis thaliana*
156 *L. Gigord, C. Lavigne, J. A. Shykoff and A. Atlan*
No evidence for local adaptation between cytoplasmic male sterility and nuclear restorer genes in the gynodioecious species *Thymus vulgaris* L.

164 *Sylvan R. Kaufman, Peter E. Smouse and Elena R. Alvarez-Buylla*
Pollen-mediated gene flow and differential male reproductive success in a tropical pioneer tree, *Cecropia obtusifolia* Bertol. (Moraceae): a paternity analysis
174 *Jinliang Wang, Armando Caballero and William G. Hill*
The effect of linkage disequilibrium and deviation from Hardy–Weinberg proportions on the changes in genetic variance with bottlenecking
187 *Hiromori Akagi, Yumi Yokozeki, Akiko Inagaki and Tatsuhito Fujimura*
Origin and evolution of twin microsatellites in the genus *Oryza*
198 *J. Guntrip and R. M. Sibly*
Phenotypic plasticity, genotype-by-environment interaction and the analysis of generalism and specialization in *Callosobruchus maculatus*
205 *P. A. Butcher, G. F. Moran and H. D. Perkins*
RFLP diversity in the nuclear genome of *Acacia mangium*
214 *Shaoqi Rao and Shizhong Xu*
Mapping quantitative trait loci for ordered categorical traits in four-way crosses
225 *M. Byrne, T. L. Parrish and G. F. Moran*
Nuclear RFLP diversity in *Eucalyptus nitens*
234 Book reviews

Number 3 September 1998

239 Short Review
W. C. Jordan and M. W. Bruford
New perspectives on mate choice and the MHC
246 *Alexandra G. Imasheva, Volker Loeschcke, Lev A. Zhivotovsky and Oleg E. Lazebny*
Stress temperatures and quantitative variation in *Drosophila melanogaster*
254 *Ahmad R. Hariri, John H. Werren and Gerald S. Wilkinson*
Distribution and reproductive effects of *Wolbachia* in stalk-eyed flies (Diptera: Diopsidae)
261 *Stephen L. Dobson and Mark A. Tanouye*
Interspecific movement of the paternal sex ratio chromosome
270 *Menno Schilthuizen and Richard Stouthamer*
Distribution of *Wolbachia* among the guild associated with the parthenogenetic gall wasp *Diplolepis rosae*
275 *Masataka G. Suzuki, Toru Shimada and Masahiko Kobayashi*
Absence of dosage compensation at the transcription level of a sex-linked gene in a female heterogametic insect. *Bombyx mori*
284 *Bart De Greef, Ludwig Triest, Bart De Cuyper and Jos Van Slycken*
Assessment of intraspecific variation in half-sibs of *Quercus petraea* (Matt.) Liebl. 'plus' trees
291 *Magali Esquibet, Sadia Bekal, Philippe Castagnone-Sereno, Jean-Pierre Gauthier, Roger Rivoal and Georges Caubel*
Differentiation of normal and giant *Vicia faba* populations of the stem nematode *Ditylenchus dipsaci*: agreement between RAPD and phenotypic characteristics
299 *R. Wu and R. F. Stettler*
Quantitative genetics of growth and development in *Populus*. III. Phenotypic plasticity of crown structure and function
311 *Daisuke Kageyama, Sugihiko Hoshizaki and Yukio Ishikawa*
Female-biased sex ratio in the Asian corn borer, *Ostrinia furnacalis*: evidence for the occurrence of feminizing bacteria in an insect
317 *Peter M. Visscher and Chris S. Haley*
Power of a chromosomal test to detect genetic variation using genetic markers
327 *María Inés Roldán, José Luis García-Marín, Fred M. Utter and Carles Pla*
Population genetic structure of European hake, *Merluccius merluccius*
335 *Margarita B. Rogatcheva, Sen-Ichi Oda, Tatiana I. Axenovich, Yurii S. Aulchenko, Jeremy B. Searle and Pavel M. Borodin*
Chromosomal segregation and fertility in Robertsonian chromosomal heterozygotes of the house musk shrew (*Suncus murinus*, Insectivora, Soricidae)

342 *Francesco Silvestrini , Carlo Severini, Valeria Di Pardo, Roberto Romi, Elvira De Matthaeis and Michel Raymond*
Population structure and dynamics of insecticide resistance genes in *Culex pipiens* populations from Italy
349 *Jane F. Sampson*
Multiple paternity in *Eucalyptus rameliana* (Myrtaceae)
356 Book reviews

Number 4 October 1998

361 Short Review
Oliver Kaltz and Jacqui A. Shykoff
Local adaptation in host–parasite systems
371 *David F. West and William C. Black IV*
Breeding structure of three snow pool *Aedes* mosquito species in northern Colorado
381 *Pekka Pamilo and Snaebjörn Pálsson*
Associative overdominance, heterozygosity and fitness
390 *Tomasz M. Wilanowski, Simon H. S. Yoong, Slawomir Bartoszewski and John B. Gibson*
Expression of the GPDH-4 isozyme of *sn*-glycerol-3-phosphate dehydrogenase in three *Drosophila* species
396 *F. A. Aravanopoulos and L. Zsuffa*
Heterozygosity and biomass production in *Salix eriocephala*
404 *Charles F. Baer*
Population structure in a south-eastern US freshwater fish, *Heterandria formosa*. II. Gene flow and biogeography within the St. Johns River drainage
412 *Steffi Knoll and Martine Rowell-Rahier*
Distribution of genetic variance and isolation by distance in two leaf beetle species: *Oreina cacaliae* and *Oreina speciosissima*
422 *Tokuko Ujino, Takayuki Kawahara, Yoshihiko Tsumura, Teruyoshi Nagamitsu, Hiroshi Yoshimaru and Wickneswari Ratnam*
Development and polymorphism of simple sequence repeat DNA markers for *Shorea curisii* and other Dipterocarpaceae species
429 *Thure P. Hauser, Ruth G. Shaw and Hanne Østergård*
Fitness of F_1 hybrids between weedy *Brassica rapa* and oilseed rape (*B. napus*)
436 *Thure P. Hauser, Rikke B. Jørgensen and Hanne Østergård*
Fitness of backcross and F_2 hybrids between weedy *Brassica rapa* and oilseed rape (*B. napus*)
444 *V. A. Confalonieri, A. S. Sequeira, L. Todaro and J. C. Vilardi*
Mitochondrial DNA and phylogeography of the grasshopper *Trimerotropis pallidipennis* in relation to clinal distribution of chromosome polymorphisms
453 *D. Charlesworth and Z. Yang*
Allozyme diversity in *Leavenworthia* populations with different inbreeding levels
462 *I. P. King, W. G. Morgan, I. P. Armstead, J. A. Harper, M. D. Hayward, A. Bollard, J. V. Nash, J. W. Forster and H. M. Thomas*
Introgression mapping in the grasses. I. Introgression of *Festuca pratensis* chromosomes and chromosome segments into *Lolium perenne*
468 Book reviews

Number 5 November 1998

473 Short Review
Roger Butlin, Isa Schön and Koen Martens
A sexual reproduction in non-marine ostracods
481 *Chen Luo*
Multiple chromosomal banding in grass carp, *Ctenopharyngodon idellus*
486 *H. De Wolf, T. Backeljau and R. Verhagen*
Congruence between allozyme and RAPD data in assessing macrogeographical genetic variation in the periwinkle *Littorina striata* (Mollusca, Gastropoda)

493 *Michael M. Hansen and Karen-Lise D. Mensberg*
Genetic differentiation and relationship between genetic and geographical distance in Danish sea trout (*Salmo trutta* L.) populations
505 *Eja Heikkinen and Jaakko Lumme*
The Y chromosomes of *Drosophila lummei* and *D. novamexicana* differ in fertility factors
514 *Andrew G. Clark and Christopher D. Fucito*
Stress tolerance and metabolic response to stress in *Drosophila melanogaster*
528 *Vittorio Lucchini and Ettore Randi*
Mitochondrial DNA sequence variation and phylogeographical structure of rock partridge (*Alectoris graeca*) populations
537 *Olivier Raspé and Anne-Laure Jacquemart*
Allozyme diversity and genetic structure of European populations of *Sorbus aucuparia* L. (Rosaceae: Maloideae)
546 *Donna W. Vogler, Chandreyee Das and Andrew G. Stephenson*
Phenotypic plasticity in the expression of self-incompatibility in *Campanula rapunculoides*
556 *J. M. Warren, A. F. Raybould, T. Ball, A. J. Gray and M. D. Hayward*
Genetic structure in the perennial grasses *Lolium perenne* and *Agrostis curtisii*
563 *Alex Widmer, Paul Schmid-Hempel, Arnaud Estoup and Adolf Scholl*
Population genetic structure and colonization history of *Bombus terrestris* s.l. (Hymenoptera: Apidae) from the Canary Islands and Madeira
573 *Jérôme Rousselet, Claude Géri, Godfrey M. Hewitt and Françoise Lemeunier*
The chromosomes of *Diprion pini* and *D. similis* (Hymenoptera: Diprionidae): implications for karyotype evolution
579 *Michael Bulmer*
Galton's law of ancestral heredity
586 *Aristotelis C. Papageorgiou*
Diploid sporophytic tissue in the seed of *Cupressus sempervirens* L.
591 Book reviews
597 Corrigendum

Number 6 December 1998

599 Short Review
A. E. Douglas
Host benefit and the evolution of specialization in symbiosis
604 *Laura Walin, Liselotte Sundström, Perttu Seppä and Rainer Rosengren*
Worker reproduction in ants—a genetic analysis
613 *Parminder S. Virk, Brian V. Ford-Lloyd and H. John Newbury*
Mapping AFLP markers associated with subspecific differentiation of *Oryza sativa* and an investigation of segregtion distortion
621 *Risto Väinölä*
A sex-linked locus (*Mpi*) in the opossum shrimp *Mysis relicta*: implications for early postglacial colonization history
630 *Peter D. Keightley, Kenneth H. Morris, Akira Ishikawa, Victoria M. Falconer and Fiona Oliver*
Test of candidate gene–quantitative trait locus association applied to fatness in mice
638 *Paul Sunnucks, Darren Chisholm, Eren Turak and Dinah F. Hales*
Evolution of an ecological trait in parthenogenetic *Sitobion* aphids
648 *V. Poncet, F. Lamy, J. Enjalbert, H. Joly, A. Sarr and T. Robert*
Genetic analysis of the domestication syndrome in pearl millet (*Pennisetum glaucum* L., Poaceae): inheritance of the major characters
659 *I. Pašakinskienė, K. Anamthawat-Jónsson, M. W. Humphreys, V. Paplauskiene and R. N. Jones*
New molecular evidence on genome relationships and chromosome identification in fescue (*Festuca*) and ryegrass (*Lolium*)
666 *Susan J. Armstrong, Paul Fransz, David F. Marshall and Gareth H. Jones*
Physical mapping of DNA repetitive sequences to mitotic and meiotic chromosomes of *Brassica oleracea* var. *alboglabra* by fluorescence *in situ* hybridization
674 *Steven A. Fennimore, Wyman E. Nyquist, Gregory E. Shaner, Stanley P. Myers and Michael E. Foley*
Temperature response in wild oat (*Avena fatua* L.) generations segregating for seed dormancy

683 *Tamsin M. O. Majerus, Michael E. N. Majerus, Brigitte Knowles, Joy Wheeler, Dominique Bertrand, Victor N. Kuznetzov, Hideki Ueno and Gregory D. D. Hurst*
Extreme variation in the prevalence of inherited male-killing microorganisms between three populations of *Harmonia axyridis* (Coleoptera: Coccinellidae)
692 *David O. F. Skibinski and Robert D. Ward*
Are polymorphism and evolutionary rate of allozyme proteins limited by mutation or selection?
703 Book reviews
706 Author Index
711 Keyword index